CLAIMS:

1. A method of generating a quadrature amplitude modulation (QAM) signal comprising:

creating a composite amplitude modulated signal using two carriers of the same frequency wherein the two carriers are distinguished by having a phase difference of 90 degrees;

amplifying the signal in a power amplifier for transmission, the power amplifier having an input port for adjustment of a compression value of the amplifier;

repeatedly generating a signal indicative of a peak power requirement of the signal;

and using the peak power requirement to dynamically adjust the power amplifier compression to match the requirements of the instantaneous symbol power.

2. The method according to Claim 1 wherein there is provided a time delay to ensure the power amplifier compression is adjusted when the power is required.

3. The method according to Claim 1 wherein the time delay is arranged such that, if the power requirement is increased, the power amplifier compression is adjusted at an advanced time before the requirement.

4. The method according to Claim 1 wherein the time delay is arranged such that, if the power requirement is decreases, the power amplifier compression is adjusted at a delayed time after the requirement.

5. The method according to Claim 1 wherein the signal indicative of a peak power requirement is generated by monitoring the digital symbols.

6. The method according to Claim 1 wherein the signal indicative of a peak power requirement is generated by monitoring the baseband .

7. The method according to Claim 1 wherein the signal indicative of a peak power requirement is generated by monitoring the modulated signals.

8. The method according to Claim 1 wherein the power amplifier compression is adjusted in steps.

9. The method according to Claim 1 wherein the power amplifier compression is adjusted gradually.

10. The method according to Claim 1 wherein the power amplifier compression is adjusted at symbol rate

11. The method according to Claim 1 wherein the power amplifier compression is adjusted at higher than symbol rate.

12. The method according to Claim 1 wherein the power amplifier compression is adjusted at lower than symbol rate.

13. The method according to Claim 1 wherein there is provided a look up table in a memory for determining the power amplifier compression from the peak power requirement.

14. The method according to Claim 1 wherein the power amplifier compression is controlled by a digital signal.

15. The method according to Claim 1 wherein the power amplifier compression is controlled by a digitally selecting one or more from a plurality of resistances for controlling a current supply to the power amplifier.

16. The method according to Claim 1 wherein the power amplifier compression is controlled by a controlling a current supply to the power amplifier by analogue FET control.

17. The method according to Claim 1 wherein the QAM signal is a multi-channel QAM, where the symbol power is based on the sum of the individual powers.

18. The method according to Claim 1 wherein there is provided a pre-distortion compensation of the modulating signal level to correct for any small gain changes occurring with the dynamic compression adjustment.

19. The method according to Claim 1 wherein the compression control of the power amplifier is used to exceed the normal average power to provide higher peak powers that would normally not be possible without damage to the RF amplifier.